

and rate of growth. Metastatic carcinoma of the breast tends to produce bone destruction with little associated new bone formation, while carcinoma of the prostate produces little bone destruction and much new bone formation. Reduction in density in sarcoma usually occurs *en masse* and while the outline of the area destruction may be irregular, extensive pocket formation is uncommon. New bone formation in the ossifying types of sarcoma may be sufficiently extensive to offset the reduction in density resulting from bone destruction but its distribution and arrangement are usually such that the shadows cast are of diagnostic significance. Central giant-celled tumors affecting the ends of the living bones form a special group and it is questioned whether they should be classified with sarcomas. They reduce bone density by eccentric growth and are entirely devoid of any tendency to undergo ossification. The reduction of density in bone cysts is quite similar to that in giant-celled tumors in that the process begins in the interior of the bone and produces eccentric erosion without subsequent ossification of the tissue which caused the erosion. Small perforations of the cortex are more common. The site affected is farther from the bone end.

PEDIATRICS

UNDER THE CHARGE OF

THOMPSON S. WESTCOTT, M.D., AND ALVIN E. SIEGEL, M.D.,
OF PHILADELPHIA.

A Contribution to the Topographic Anatomy of the Thymus Gland with Particular Reference to its Changes at Birth and in the Period of the Newborn.—NOVACK (*Am. Jour. Dis. Children*, August, 1921) studied 65 fetuses and full-term children. He found that the lobation of the thymus is determined early in fetal life, and the establishment of respiration has no effect on it. The thymus in the late fetus and in the newborn is predominantly of the cervicothoracic type, with the position intermediate between the cervical location in the embryo and the thoracic location of the older infant child and adolescent. In the late fetus and in stillborn children there is a typical form and quite constant relations. Its lateral surfaces are convex and bulge against the medial surfaces of the lungs. The lungs very rarely extend at all on its anterior surface and the thymus very rarely extends at all on the anterior surface of the right ventricle of the heart. In liveborn infants it has a typical form and relation which are similar to those found in young children. It is elongated and molded so that the anteroposterior and lateral surface bear the impressions of all the organs with which it is in contact. The lateral surfaces usually show marked convexities, which are occupied by the lungs, which pass over the anterior surface of the organ. Unlike the fetal thymus it usually extends more inferiorly, passing over the right ventricle. The change from the broad or fetal type to the elongated and molded type found in the liveborn and in

young infants bears a direct relation to the establishment of respiration and is dependent on the expansion of the lungs. The organ is compressed from side to side by the medial surfaces of the expanding lung. It is compressed anteroposteriorly by the anterior borders of the lungs, which become much thickened in the establishment of respiration as they gradually overlap the thymus. In some cases the thymic substance may project posteriorly at birth to such an extent that some of the strictures situated there are compressed by it. This may be due either to an unusually large thymus or to a very narrow superior thoracic aperture which will not allow the thymus to protrude into the cervical region as it is compressed by the expanding lungs. A distinction should be made between the broad fetal type and the infantile or narrow elongated type.

Calcium and Phosphorus in the Serum in Relation to Rickets.— HOWLAND and KRAMEN (*Am. Jour. Dis. Children*, August, 1921) found that in non-rachitic children the concentration of calcium is from 10 to 11 mg. per 100 cc of serum. The concentration of inorganic phosphorus is about 5 mg. per 100 cc of serum. The constancy of the concentration of calcium, phosphorus and bicarbonate in the serum of normal children undoubtedly determines the constancy of the inorganic composition of normal bone. During the period of active rickets the calcium concentration may be normal or slightly reduced. The reduction does not seem to depend directly on rickets. There are reasons for believing that in many instances the reduction is related to a latent form of tetany. The inorganic phosphorus of the serum is regularly reduced in active rickets, sometimes to an extreme degree. During the process of healing, whether occurring spontaneously or as the result of the administration of cod-liver oil, the phosphorus content of the serum gradually rises to a normal figure and often somewhat above this. Relapses are accompanied by a fall in the phosphorus concentration of the serum. All the children under two and a half years of age in whom there was an inorganic phosphorus content of the serum of 3 mg. or less had been suffering from rickets.

The Casein of Cows' Milk and Human Milk in their Relation to Infant Feeding (the Action of Rennin on Casein).—BOSWORTH (*Am. Jour. Dis. Children*, August, 1921) found that the casein from cows' milk and human milk are acids, having the same chemical composition and the same chemical characteristics, the two caseins forming the same series of salts with bases. In cows' milk the casein is present as a calcium caseinate, while in human milk the casein probably is present as a potassium caseinate. When rennin is added to solutions of casein or to milk the casein is split into two equal molecules of paracasein. The addition of rennin to solutions of casein or to milk may or may not result in coagulation, depending on the nature of the salts in the solution or milk. Coagulation is promoted by soluble calcium salts and is retarded or inhibited by the addition of soluble salts of sodium, potassium or ammonium. The development of acidity in cows' milk favors coagulation after the addition of rennin; the greater the acidity the tougher the curds. Milk in entering the infant's stomach is acted upon by the enzymes present. The enzyme rennin, acting upon casein,